MINNESOTA CORN MOVEMENTS 1979

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by

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INTRODUCTION

Corn is Minnesota's most important farm crop. Although a large share of Minnesota corn is fed locally, the proportion of total corn production fed locally has declined in recent years as corn production and exports have risen dramatically. This increase in production and exports has increased the demand for transportation and marketing services.

At the present time, the marketing chain connecting Minnesota corn producers to foreign and domestic markets is undergoing major changes. These changes include the growth of the Pacific Northwest as a corn export market, the expansion of country subterminal elevators, and the development of unit-trains with their low rates.

The growth of the Pacific Northwest as an export market is in response to the growing demand for corn from countries bordering the Pacific Ocean. Major Pacific Rim customers include Japan, Taiwan, China, and Korea. Historically, corn exported to these countries moved from ports on the Gulf of Mexico through the Panama Canal and across the Pacific. Higher ocean fuel costs, bottlenecks at the Panama Canal, and the Mississippi River bottleneck at Lock and Dam 26 have worked in favor of ports in the Pacific Northwest.

Lower unit-train rates have reduced the transport costs from country subterminals and have increased marketing alternatives for country elevators. As a result, more and more grain is being shipped directly between country subterminals and deep-water ports at the Gulf of Mexico and in the Pacific Northwest.

The investment in unit-train loading facilities has been dramatic. In 1974, there were 19 country subterminal elevators in Minnesota which

could load 25 cars or more. In 1980, there were 55. Most of these facilities are located in southern Minnesota where corn density is greatest.

The passage of the "Staggers Rail Act of 1980" and increases in waterway user fees will also influence the marketing of Minnesota cash corn.

Major provisions of the Staggers Act involve abandonment and rate-making policy. The Act encourages railroad companies to abandon unprofitable lines. Minnesota, which has many light-density lines, may lose additional lines.

The rate-making provisions include significant deregulation which allows railroad companies more freedom in raising and lowering rates. Furthermore, railroads can now enter into rate and service contracts with shippers. This ability to enter into contracts could place smaller shippers at a disadvantage to larger shippers who have more bargaining power with the railroads.

Several waterway user fee proposals may add as much as 20 cents per bushel to freight costs. Most of the added cost woul be transferred back to producers in the form of lower prices.

More extensive discussions of agricultural transportation problems facing Minnesota are available in the following Extension folders: Upper Midwest Transportation Issues for the 1980's, Extension Folder 556-1980, Jerry Fruin; Yesterday, Today, and Tomorrow: Railroads in Minnesota, Extension Folder 624-1981, Jerry Fruin and Robert Lunt; The Railroad Problem in Minnesota, Extension Folder 515-Revised 1980, Jerry Fruin and Mike Alley.

THE SURVEY

Although reliable estimates of grain production in Minnesota exist, there has not been accurate information available about the movement of grain after it leaves the farm. Information of this type is needed by grain producers, shippers, transportation firms, and merchandizers to identify additional marketing opportunities and to make better marketing decisions. This information is also necessary for the formulation of rational grain transportation policies, given the uncertainties of regulatory reform and waterway user fees, railroad bankruptcies and abandonments, and road and highway financing problems.

Consequently, a survey was conducted at the request of the Minnesota Department of Agriculture and the Minnesota Department of Transportation to provide basic data relative to Minnesota grain movements. The survey was designed to estimate the quantity of grain shipped and received, the origin and destination of the shipments, the mode of transportation and the month of shipment for the 1979 calendar year.

One hundred ninety-eight country elevators, 39 terminal elevators, and 36 grain processors were surveyed. Country elevators included feed mills and train-loading facilities that were not in the Twin Cities, Red Wing, Winona, and Duluth/Superior. Terminal elevators included the lake terminals in Duluth/Superior, terminal elevators on the Mississippi and Minnesota Rivers capable of loading barges, and other large terminal elevators located in the Twin Cities rail-switching district. Grain processors included all Minnesota processors of wheat, soybeans, barley, sunflowers, oats, flax, and rye.

Each year there are unforeseen developments which influence marketing patterns. Calendar year 1979 was no exception. Larger than average harvests in 1978 and 1979, a rail car shortage, and a Grain Millers strike in Duluth/Superior all influenced the flow of grain in 1979. The rail car shortage

was aggravated by the bankruptcies of the Rock Island and Milwaukee Railroads. The Grain Millers strike, which began on July 6, virtually halted all grain shipments from Duluth/Superior harbors for the next 82 days.

This folder examines the movement of corn. Four companion folders examine wheat movements, soybean movements, all other grain movements (sunflowers, barley, oats, flax and rye), and all grain movements.

CORN MOVEMENTS INTO AND WITHIN MINNESOTA

Minnesota country elevators shipped an estimated 232 million bushels of corn to terminal elevators and other country elevators located in Minnesota (and Superior, Wisconsin) during 1979. An additional 28 million bushels were shipped into Minnesota by country elevators in neighboring states.

Terminal elevators in the Twin Cities, Red Wing, and Winona received an estimated 183 million bushels (Figure 1). Trucks accounted for 94 percent of the shipments to these three locations. Roughly 90 percent of the receipts were from Minnesota country elevators. A large share of the receipts (63%) were from country elevators in the South Central and Southeast crop reporting districts (CRDs).

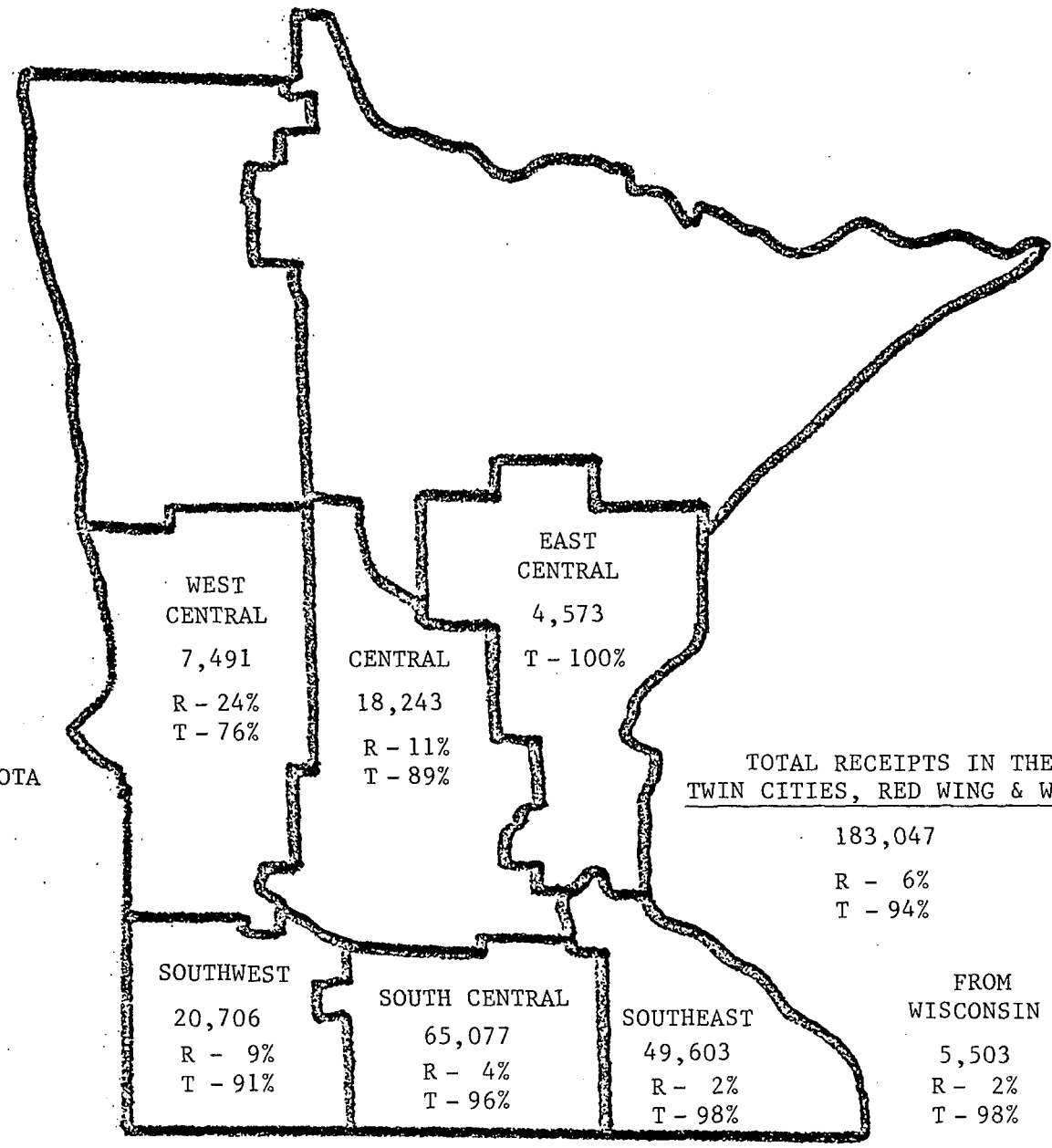
An estimated 56 million bushels were received in Duluth/Superior (Figure 2). In contrast to shipments to the Twin Cities, the majority of shipments (73%) to Duluth/Superior were by rail. Fifty-seven percent of these rail shipments originated in south central and southwest Minnesota.

Roughly 17 million bushels were shipped from one Minnesota country elevator to another country elevator. The majority of these shipments were by truck to nearby train-loading country elevators located in the South Central, West Central, and Southwest CRDs in 1979. (The country elevator to country train-loading elevator movement was even larger in 1980 and 1981.) Table 1 summarizes country elevator corn shipments into and within Minnesota for 1979.

Figure 1

1979 UPPER MIDWEST COUNTRY ELEVATOR CORN SHIPMENTS
TO THE TWIN CITIES, RED WING, AND WINONA

(1,000 bushels)



FROM SOUTH DAKOTA
5,247
R - 29%
T - 71%

TOTAL RECEIPTS IN THE TWIN CITIES, RED WING & WINONA
183,047
R - 6%
T - 94%

FROM WISCONSIN
5,503
R - 2%
T - 98%

FROM IOWA
6,604
R - 3%
T - 97%

FIGURE 2

1979 UPPER MIDWEST COUNTRY ELEVATOR CORN SHIPMENTS TO DULUTH/SUPERIOR

(1,000 bushels)

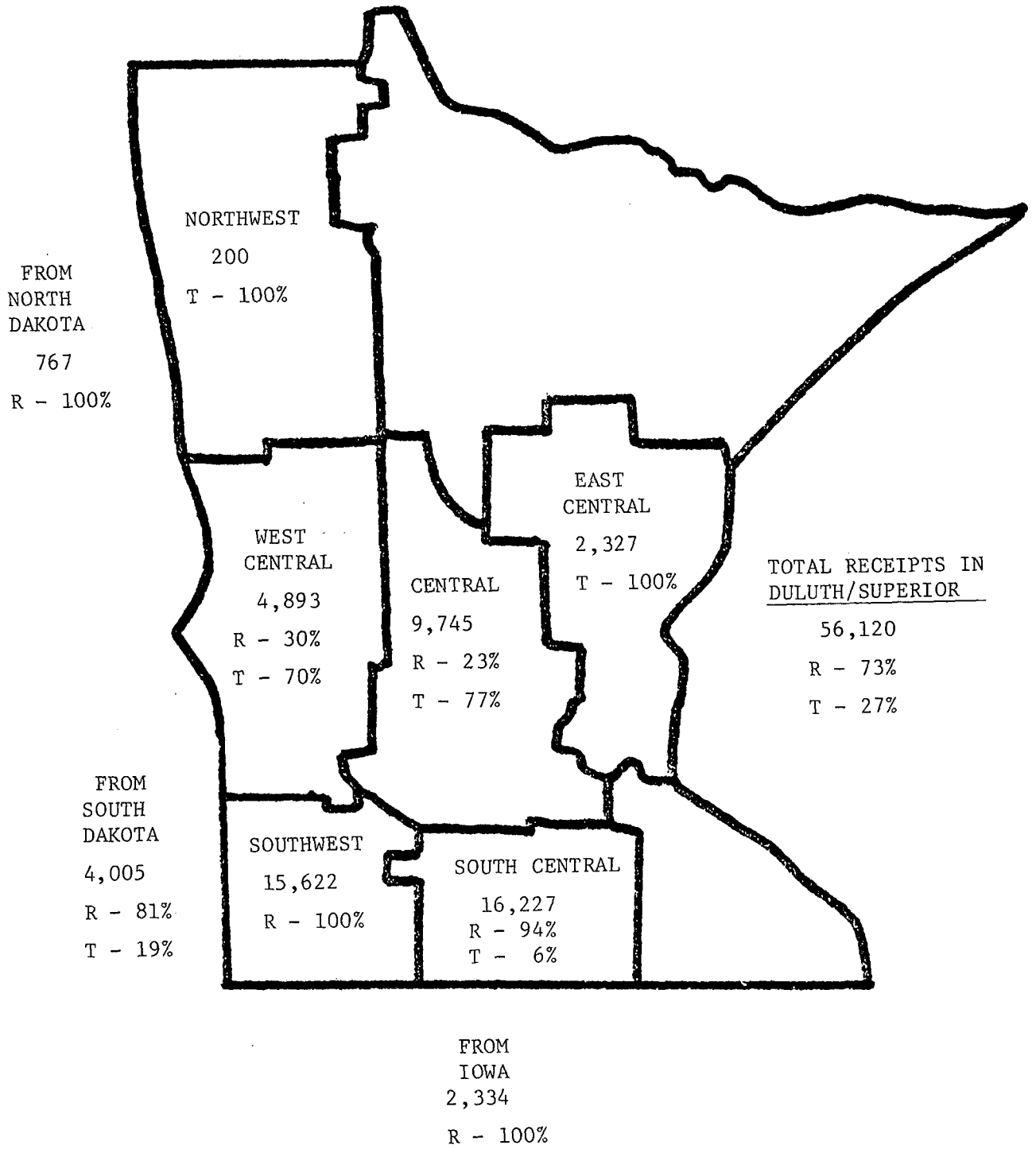


TABLE 1

1979 UPPER MIDWEST COUNTRY ELEVATOR
CORN SHIPMENTS TO MINNESOTA DESTINATIONS

(1,000 bushels)

ORIGIN Minnesota	Twin Cities[1]	Duluth/Superior	Other Minnesota	TOTAL	% RAIL	% TRUCK
Northwest	--	200	361	561	0	100
North	--	--	--	--	--	--
West Central	7,491	4,893	7,262	19,646	17	83
Central	18,243	9,745	854	28,842	15	85
East Central	4,573	2,327	--	6,900	0	100
Southwest	20,706	15,622	2,025	38,353	46	54
South Central	65,077	16,227	6,699	88,003	20	80
Southeast	49,603	--	--	49,603	2	98
Sub Total	165,693	49,014	17,201	231,908	19	81
Out-of-State						
North Dakota	--	767	--	767	0	100
South Dakota	5,247	4,005	1,350	10,602	45	55
Iowa	6,604	2,334	2,008	10,946	23	77
Wisconsin	5,503	--	--	5,503	2	98
Sub Total	17,354	7,106	3,358	27,818	29	71
TOTAL	183,047	56,120	20,559	259,726	20	80
% RAIL	6	73	0	20		
% TRUCK	94	27	100	80		

[1]Includes Red Wing and Winona.

CORN MOVEMENTS OUT OF MINNESOTA

Minnesota grain marketing firms shipped an estimated 344 million bushels of corn to out-of-state destinations in 1979 (Figure 3). The total of 344 million bushels of shipments is greater than the total receipts of the terminal elevators at the Twin Cities, Duluth/Superior, and Winona because of direct shipments from country elevators to out-of-state locations. Water modes of transportation accounted for over half (60%) of the shipments from the state. Railroads accounted for 34 percent of the shipments. Most rail shipments were in unit trains from country elevators with multi-car loading capabilities. Major destinations were the Gulf of Mexico (primarily barge mode), followed by Direct Exports (primarily through the Great Lakes by laker), and the Pacific Northwest (by unit train).

Out-of-State Shipments from Terminal Elevators

Terminal elevators in Minnesota and Superior, Wisconsin, shipped an estimated 223 million bushels. The represents 65 percent of total corn shipments out of Minnesota in 1979 (Figure 4). Over 90 percent of the shipments were by barge or vessel. Railroads accounted for 6 percent of the shipments. The Gulf of Mexico was the major destination followed by Direct Exports from Duluth/Superior harbors.

Terminal elevators in the Twin Cities, Red Wing, and Winona shipped an estimated 171 million bushels of corn, or 77 percent of terminal elevator shipments of corn. The large majority of these shipments were by barge to the Gulf of Mexico. Railroads accounted for only 8 percent of the shipments. The majority of the rail shipments were to the Pacific Northwest for export.

An estimated 52 million bushels of corn were shipped from lake terminals in Duluth/Superior in 1979. Virtually all these shipments were by vessel to Canada, Europe, and the Soviet Union.

Country Elevators

Country elevators in Minnesota shipped an estimated 121 million bushels of corn to out-of-state destinations in 1979 (Figure 5). The major destinations were the Gulf of Mexico export ports followed by the Pacific Northwest export ports. Railroads were used for 85 percent of the total shipments from country elevators. A large share of the rail shipments were by unit train originating in the South Central, Southwest, and West Central CRDs.

Deepwater terminal elevators at the Gulf of Mexico received 56 million bushels of corn from Minnesota country elevators. Almost all of the shipments to the Gulf were from firms with train-loading capabilities which qualified for the low multiple-car and unit-train rates. All the rail shipments to the Gulf were from the South Central and Southwest CRDs.

A substantial share of the shipments to the Gulf were from country elevators which owned or leased covered hoppers. Of the 32 firms surveyed which shipped to the Gulf, 20 owned or leased covered hoppers. Rail car fleets ranged from 4 to 150 cars. The majority of firms which shipped grain directly to the Gulf also trucked grain to the Twin Cities.

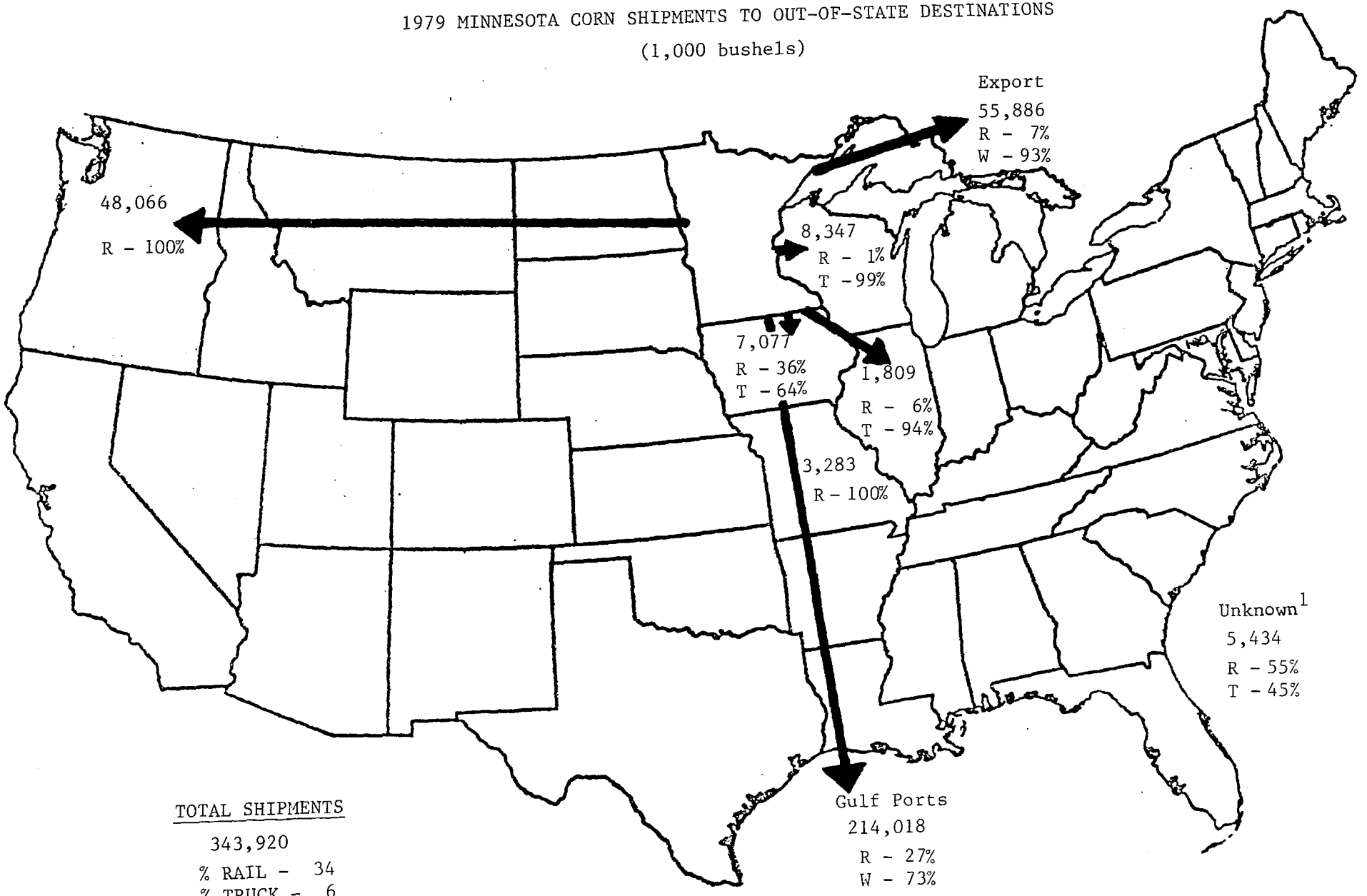
An estimated 39 million bushels were shipped to terminal elevators at Pacific Northwest ports. All the shipments were at single-car rail rates as no multiple-car rates existed at the time. The majority of shipments originated in the West Central CRD and the northern half of the Southwest CRD.

The growth of the Pacific Northwest as a corn export market has been rapid. Terminal elevators on the Columbia River and in Puget Sound, which did not export corn in 1977, exported 68 million bushels in 1978, 171 million bushels in 1979 (the study year), and 270 million bushels in 1980.

FIGURE 3

1979 MINNESOTA CORN SHIPMENTS TO OUT-OF-STATE DESTINATIONS

(1,000 bushels)



TOTAL SHIPMENTS

343,920

% RAIL - 34
% TRUCK - 6
% WATER - 60

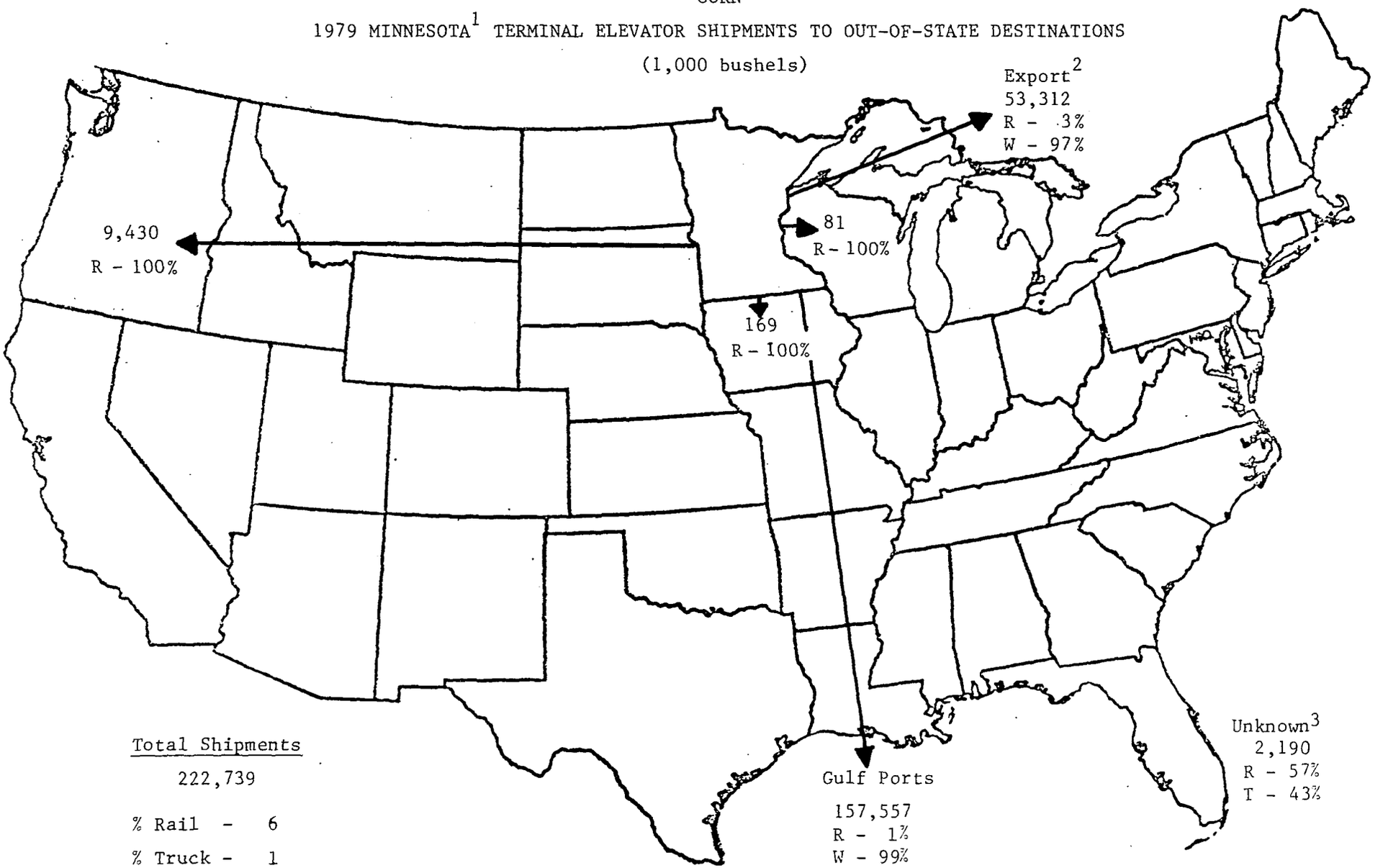
[1]Shipments to unknown locations outside Minnesota.

FIGURE 4

CORN

1979 MINNESOTA[1] TERMINAL ELEVATOR SHIPMENTS TO OUT-OF-STATE DESTINATIONS

(1,000 bushels)



Total Shipments

222,739

% Rail - 6

% Truck - 1

% Water - 93

[1]Includes terminal elevators in Superior, Wisconsin

[2]Includes Canada.

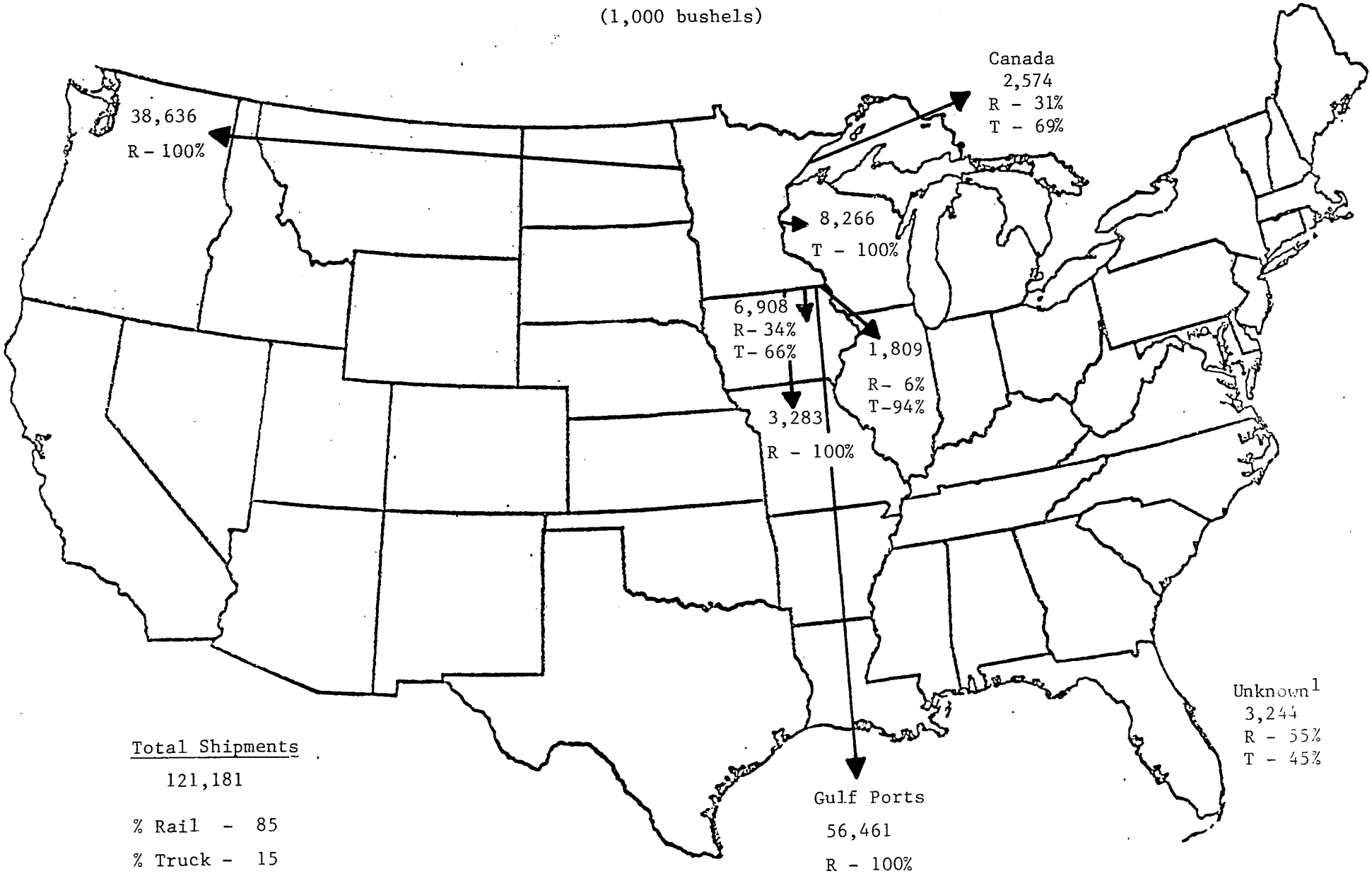
[3]Shipments to unknown locations outside Minnesota.

FIGURE 5

CORN

1979 MINNESOTA COUNTRY ELEVATOR SHIPMENTS TO OUT-OF-STATE DESTINATIONS

(1,000 bushels)



[1]Shipments to unknown locations outside Minnesota.

EXPORT DESTINATIONS

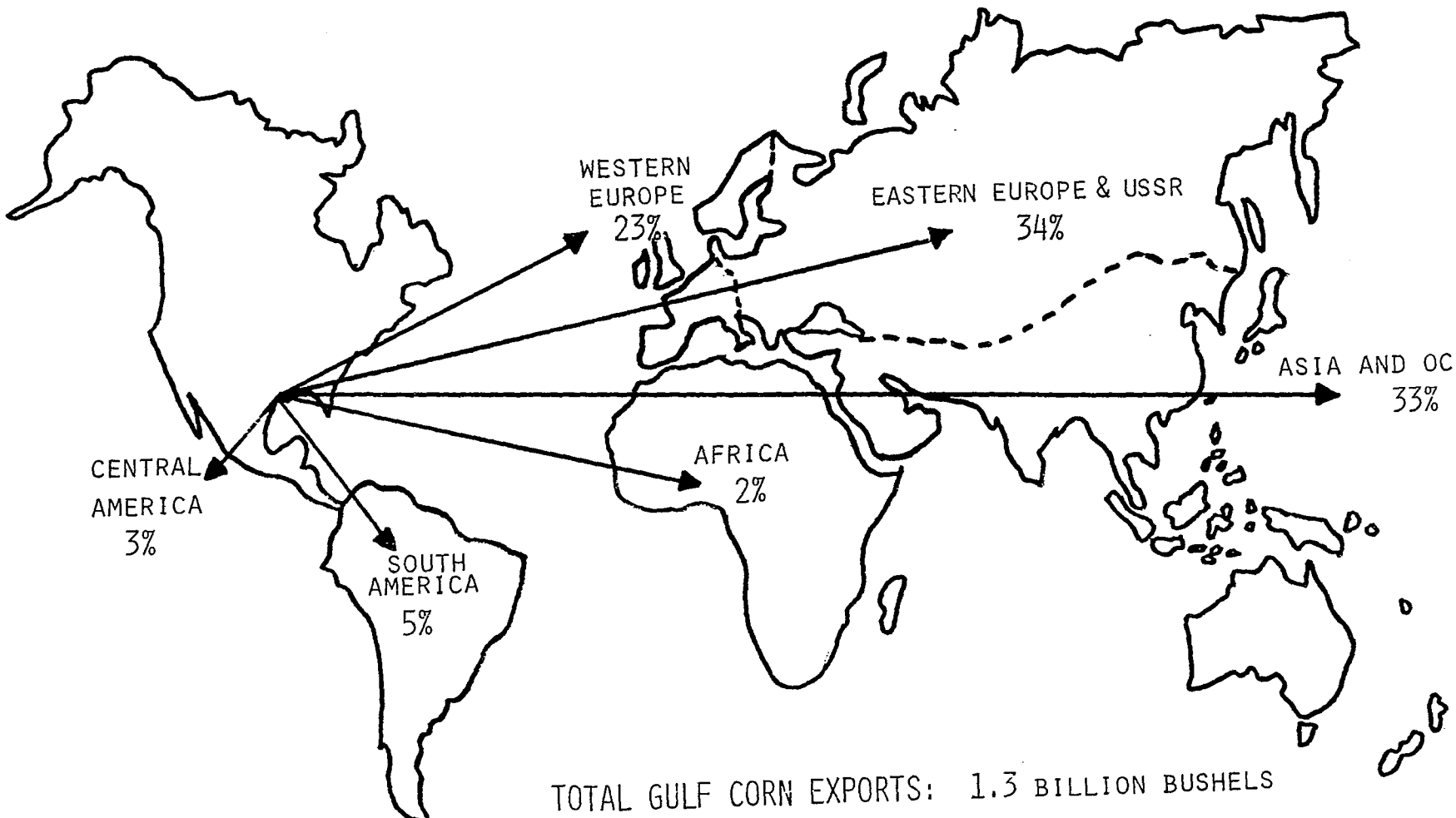
The United States exported roughly 2.3 billion bushels of corn in 1979. Minnesota corn accounted for roughly 13 percent, or 311 million bushels, of these exports. Because Minnesota corn shipped to deepwater ports is commingled in storage, it is not possible to trace the exact movement of Minnesota corn to the destination countries. However, grain inspection data published weekly by the USDA can be used to determine as nearly as possible, the ultimate destination of Minnesota corn exports.

Figures 6 through 8 show the destination regions for corn exports from ports at the Gulf of Mexico, Duluth/Superior, and the Pacific Northwest. The major buyers for corn exported through the Gulf of Mexico were the Soviet Union and Japan (Figure 6). Two-thirds of the corn exports from Duluth/Superior were to Communist Bloc countries (Figure 7). The Soviet Union, with a merchant fleet sized for efficient travel through the Great Lakes and St. Lawrence Seaway, received the majority of these shipments. Exports to Canada were used in Canada or transshipped overseas. Corn was the only grain shipped from Minnesota for export through the Pacific Northwest in 1979 (Figure 8). Ninety-seven percent of the corn exported from the Pacific Northwest went to Pacific Rim Countries. Of these, Japan, Korea, Mainland China, and Taiwan were the major buyers.

FIGURE 6

CORN

1979 EXPORTS FROM GULF PORTS



TOTAL GULF CORN EXPORTS: 1.3 BILLION BUSHELS

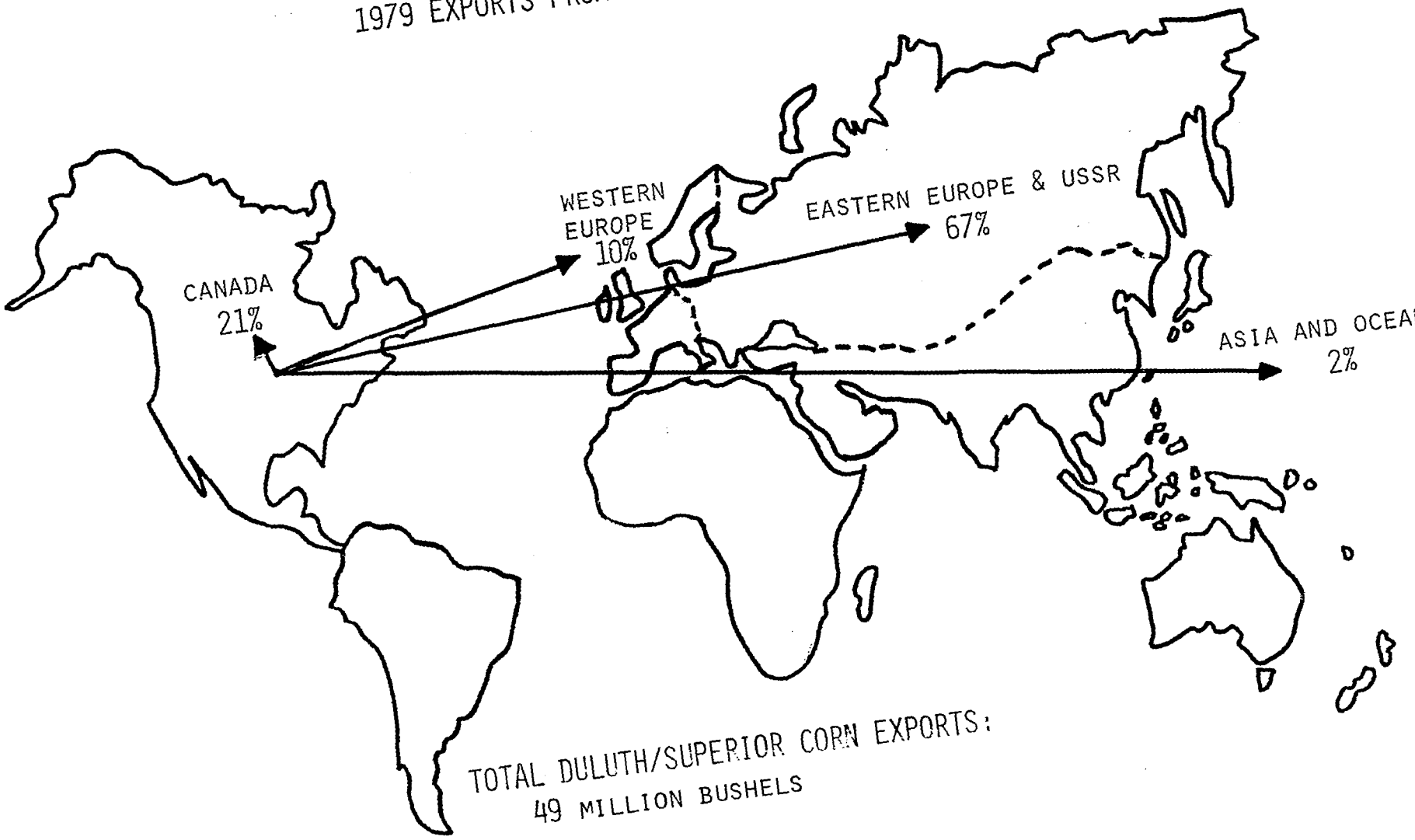
MINNESOTA ORIGINS: 214 MILLION BUSHELS

SOURCE: USDA, INSPECTION FOR EXPORTS BY COASTAL AREAS AND COUNTRY OF DESTINATION.

FIGURE 7

CORN

1979 EXPORTS FROM DULUTH/SUPERIOR PORTS

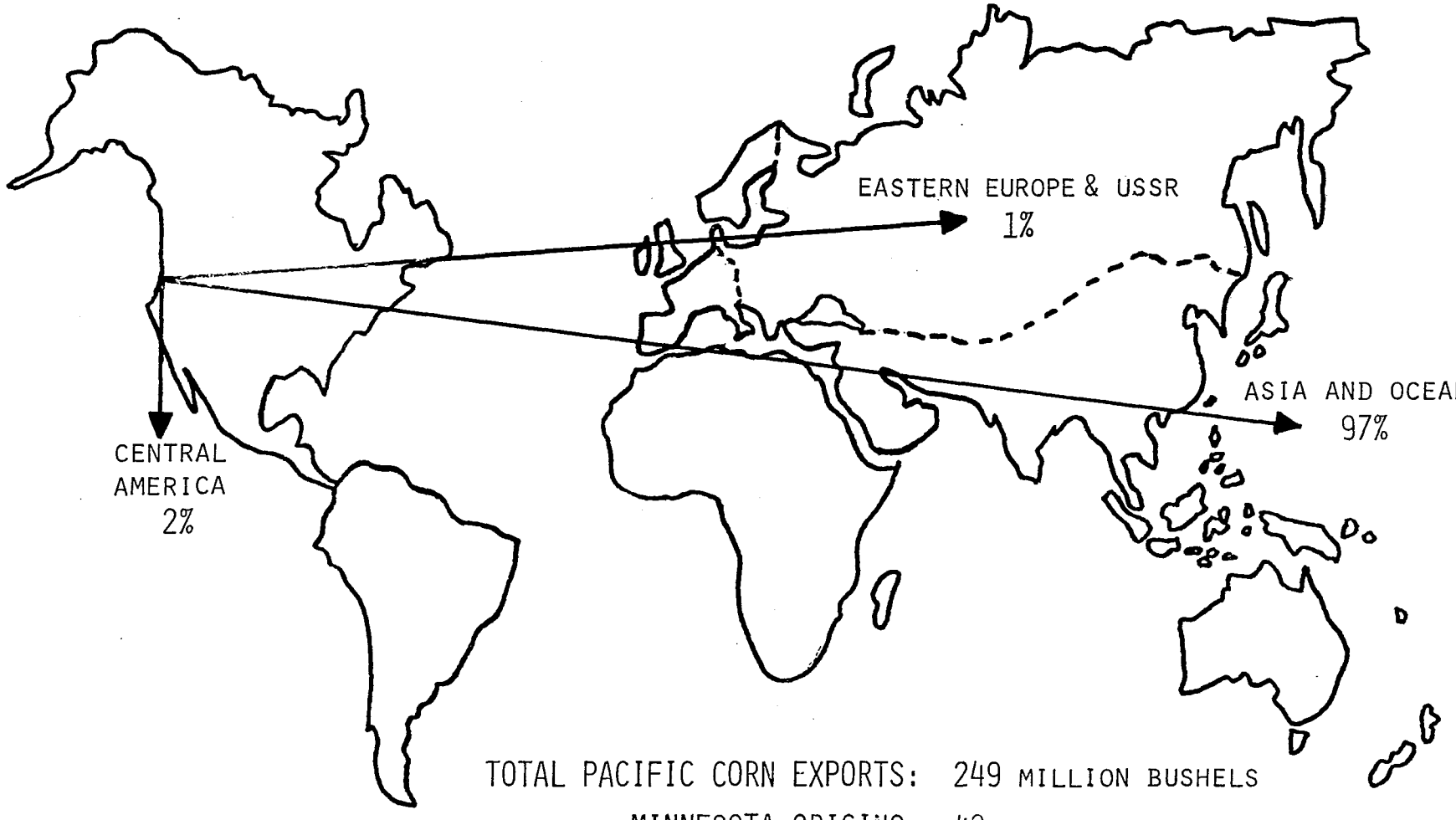


SOURCE: USDA, INSPECTION FOR EXPORTS BY COASTAL AREAS AND COUNTRY OF DESTINATION.

FIGURE 8

CORN

1979 EXPORTS FROM PACIFIC* PORTS



TOTAL PACIFIC CORN EXPORTS: 249 MILLION BUSHELS

MINNESOTA ORIGINS: 48 MILLION BUSHELS

*INCLUDES CALIFORNIA PORTS

SOURCE: USDA, INSPECTION FOR EXPORTS BY COASTAL AREAS AND COUNTRY OF DESTINATION.

IMPLICATIONS

The corn movement patterns of 1979 are a mixture of the traditional patterns of the 70's and the new, emerging corn movement patterns of the 80's. Throughout the 70's, a large share of Minnesota cash corn moved by truck to river terminals on the Minnesota and Mississippi Rivers. There it was transshipped by barge to the deepwater ports at the Gulf of Mexico and from there it was exported. In 1979, roughly 50 percent of the Minnesota export cash corn moved via truck-barge to ports on the Gulf of Mexico.

Although truck-barge transportation will continue to play a major role in the marketing of Minnesota corn, the 80's will see an increasing quantity of corn shipped by rail directly from country elevators to deepwater ports and bypassing inland terminal markets such as the Twin Cities. Most of these direct shipments will be in unit trains. This trend will continue as country elevators realize and benefit from the additional marketing opportunities and flexibility created by direct rail access. The emerging trend is evident in the 1979 corn movements. In 1979, Minnesota country elevators shipped an estimated 130 million bushels of corn by rail to deepwater ports at the Gulf of Mexico, Duluth/Superior, and the Pacific Northwest. This represents 42 percent of the total Minnesota corn shipped to these export markets.

All the transportation modes, truck, rail, and water, are important in marketing Minnesota corn. The marketing system has many problems in the transportation arena. These include serious financing problems for state and local roads, continued railroad abandonments, bankruptcies and consolidations, transportation deregulation, and increased waterway and port user charges.

It is important that these problems and trends be recognized and addressed by both the state and the private sector. Coordination and planning will be necessary to maintain the essential infrastructure required to market and move

and export Minnesota corn throughout the decade. Minnesota's agricultural prosperity will depend upon an adequate and flexible commodity transportation system.

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